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CLINICAL RESEARCH

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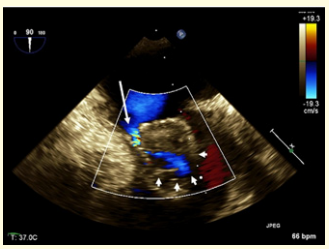
HEART FAILURE

Meta-Analysis Suggests That Trimetazidine Is Beneficial in Patients With Chronic Heart Failure 913



Lei Zhang, Yizhou Lu, Hong Jiang, Liming Zhang, Aijun Sun, Yunzeng Zou, Junbo Ge

Trimetazidine (TMZ) shifts myocardial energy production from fatty acid oxidation to glucose oxidation and has been demonstrated to be effective in stable angina pectoris. Zhang and colleagues hypothesized that TMZ would be beneficial in patients with congestive heart failure (CHF) and performed a meta-analysis to summarize the results of several small trials. A total of 16 randomized trials involving 884 CHF patients were included. Hospitalization for cardiac causes, but not all-cause mortality was reduced by TMZ treatment. TMZ therapy was also associated with an increase in left ventricular ejection fraction and total exercise time, and decreases in left ventricular dimensions. These results suggest the need for a larger clinical trial of TMZ in patients with CHF.

HEART RHYTHM DISORDERS

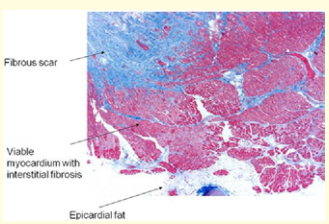
Low Rates of CVA in Patients With Incomplete LAA Closure With the Watchman Device 923

Juan F. Viles-Gonzalez, Saibal Kar, Pamela Douglas, Srinivas Dukkipati, Ted Feldman, Rodney Horton, David Holmes, Vivek Y. Reddy

The Watchman left atrial appendage (LAA) closure device is composed of a self-expanding nitinol frame structure with fixation barbs and a permeable polyester fabric. It is designed to isolate the LAA, but because of geometric variability of the LAA, ostium may not completely seal in all patients. This substudy of the PROTECT AF trial compared clinical outcomes in patients with peri-device leak to those with no leak. Serial transesophageal echocardiogram (TEE) follow-up revealed that 1 of 3 implanted patients had at least some peri-device flow at 12 months. There was no evidence of an increased risk stroke in patients with a peri-device leak. These data indicate that residual peri-device flow into the LAA with the Watchman device is common, but is not associated with an increased risk of thromboembolism.

HEART RHYTHM DISORDERS

Histopathologic Characterization of Radiofrequency Ablation Lesions After PV Isolation 930



Marcin Kowalski, Margaret M. Grimes, Francisco J. Perez, David N. Kenigsberg, Jayanthi Koneru, Vigneshwar Kasirajan, Mark A. Wood, Kenneth A. Ellenbogen

The recovery of pulmonary vein (PV) conduction is thought to be responsible for the recurrence of atrial fibrillation (AF) after catheter based PV isolation. Kowalski and colleagues collected histopathologic and electrophysiologic findings from patients with AF recurrence after PV isolation who underwent a subsequent surgical maze procedure. The major findings of this study are as follows: 1) biopsies from PVs after isolation frequently show nontransmural scar or gaps at the site of ablation; 2) PV conduction block may occur despite nontransmural lesions along the ablation line; and 3) the histology of ablation lesions is complex with evidence of reversible cellular injury. These results will help to define the optimal techniques for catheter based PV isolation.

Editorial Comment: Thomas J. McGarry, Sanjiv M. Narayan, p. 939

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PRE-CLINICAL RESEARCH

Cardiosphere-Derived Cells Appear to Have Superior Paracrine Potency and Myocardial Repair Efficacy to Other Stem Cell Types 942

Tao-Sheng Li, Ke Cheng, Konstantinos Malliaras, Rachel Ruckdeschel Smith, Yiqiang Zhang, Baiming Sun, Noriko Matsushita, Agnieszka Blusztajn, John Terrovitis, Hideo Kusuoka, Linda Marbán, Eduardo Marbán

Li and colleagues conducted a head-to-head comparison of different stem cell types for both potency and functional myocardial repair in the same mouse model to determine which type is most effective. Human cardiosphere-derived stem cells (CDCs), bone marrow-derived mesenchymal stem cells (BM-MSCs), adipose tissue-derived mesenchymal stem cells (AD-MSCs), and bone marrow mononuclear cells (BM-MNCs) were compared. In vitro, CDCs showed the greatest myogenic differentiation potency, highest angiogenic potential, and relatively high production of various angiogenic and antiapoptotic secreted factors. In vivo, CDCs resulted in superior improvement of cardiac function. CDCs exhibit a more balanced profile of paracrine factor production and functional benefit compared with other stem cell types.

PRE-CLINICAL RESEARCH

Electroanatomic Remodeling of the Left Stellate Ganglion After Myocardial Infarction 954

Seongwook Han, Kenzaburo Kobayashi, Boyoung Joung, Gianfranco Piccirillo, Mitsunori Maruyama, Harry V. Vinters, Keith March, Shien-Fong Lin, Changyu Shen, Michael C. Fishbein, Peng-Sheng Chen, Lan S. Chen

Retrograde axonal transport of nerve growth factors from infarcted myocardium to the left stellate ganglion has been shown to stimulate nerve sprouting in the myocardium. Han and colleagues measured stellate ganglionic nerve activity (SGNA) and vagal nerve activity (VNA) with continuous recording in ambulatory dogs after myocardial infarction (MI) to determine if there are also changes in the nerve's electrical activity. After baseline monitoring, MI was created by balloon occlusion, and the dogs were then continuously monitored for 2 months. SGNA was increased 1.9-fold after MI compared with baseline, while VNA was 1.5 times higher. These data indicate significant remodeling in the extracardiac autonomic and sympathetic nerve activities after MI.

Editorial Comment: Olujimi A. Ajijola, Kalyanam Shivkumar, p. 962